

**Amendments to the Claims:**

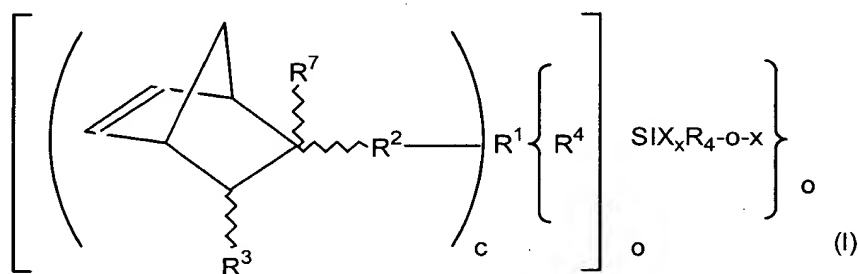
This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A process for producing a semipermeable membrane, comprising

(a) preparing a low-viscosity to resinous liquid produced by hydrolytic polycondensation of a material comprising at least one compound selected from the group consisting of:

(i) a compound of formula I



wherein

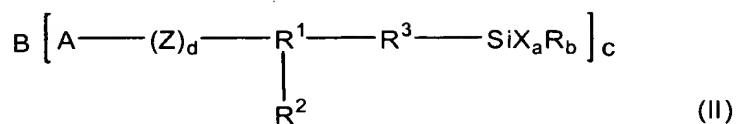
R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~

R<sup>1</sup> = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 0 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~

R<sup>2</sup> = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 0 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~

- $R^3$  = hydrogen,  $R^2-R^1-R^4-SiX_xR_{3-x}$ , carboxyl, alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~
- $R^4$  =  $(CHR^6-CHR^6)_n-$ , where  $n = 0$  or  $1$ ,  $-CHR^6-CHR^6-S-R^5-$ ,  $-CO-S-R^5-$ ,  $CHR^5-CHR^6-NR^6-R^5-$ ,  $-Y-CS-NH-R^5$ ,  $-S-R^5$ ,  $-Y-CO-NH-R^5$ ,  $-CO-O-R^5-$ ,  $-Y-CO-C_2H_3(COOH)-R^5-$ ,  $-Y-CO-C_2H_3(OH)-R^5-$  or  $-CO-NR^6-R^5-$ ,
- $R^5$  = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~
- $R^6$  = hydrogen, alkyl or aryl having 1 to 10 carbon atoms,
- $R^7$  = hydrogen, alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~
- $X$  = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxy carbonyl or  $NR''_2$ , where  $R''$  = hydrogen, alkyl or aryl,
- $Y$  =  $-O-$ ,  $-S-$  or  $-NR^6-$ ,
- $Z$  =  $-O-$  or  $-(CHR^6)_m-$ , where  $m = 1$  or  $2$ ,
- $a$  = 1, 2 or 3, where  $b = 1$  if  $a = 2$  or  $3$ ,
- $b$  = 1, 2 or 3, where  $a = 1$  if  $b = 2$  or  $3$
- $c$  = 1 to 6,
- $x$  = 1, 2 or 3, where  $a+x = 2, 3$  or  $4$ ;

(ii) a compound of formula II



wherein

B = a straight-chain or branched organic radical having at least one C = C double bond and 4 to 50 carbon atoms,

R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~

R<sup>3</sup> = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 0 to 10 carbon atoms, ~~wherein any of these radicals optionally is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, and amino group,~~

X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''<sub>2</sub>, where R'' = hydrogen, alkyl, aryl or alkylaryl,

A = O, S or NH if d = 1 and Z = CO and

R<sup>1</sup> = alkylene, arylene or alkylenearylene comprising between 1 to 10 carbon atoms, ~~wherein any of these radicals optionally is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, and amino group, and~~

R<sup>2</sup> = COOH or H,

or

A = O, S, NH or COO if d = 1 and Z = CHR', where

R' = H, alkyl, aryl or alkylaryl, and

$R^1$  = alkylene, arylene or alkylenearylene comprising between 1 to 10 carbon atoms, ~~wherein any of these radicals optionally is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, and amino group, and~~

$R^2$  = OH

or

A = O, S, NH or COO if d = 0 and

$R^1$  = alkylene, arylene or alkylenearylene comprising between 1 to 10 carbon atoms, ~~wherein any of these radicals optionally is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, and amino group, and~~

$R^2$  = OH,

or

A = S if d = 1 and Z = CO and

$R^1$  = N and

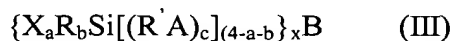
$R^2$  = H,

a = 1, 2 or 3,

b = 0, 1 or 2, where a+b = 3,

c = 1, 2, 3 or 4;

(iii) a compound of formula III

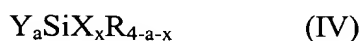


wherein

- A = O, S, PR'', POR'', NHC(O)O or NHC(O)NR'',
- B = a straight-chain or branched organic radical derived from a compound B' having at least one (if c = 1 and A = NHC(O)O or NHC(O)NR'') or at least two C = C double bond(s) and 5 to 30 carbon atoms,
- R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,~~
- R' = alkylene, arylene or alkylenearylene,
- R'' = hydrogen, alkyl, aryl or alkylaryl,
- X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''<sub>2</sub>,
- a = 1, 2 or 3,
- b = 0, 1 or 2,
- c = 0 or 1,
- x = an integer whose maximum value corresponds to the number of double bonds in the compound B' minus 1, or is equal to the number of double bonds in the compound B' if c = 1 and A is NHC(O)O or NHC(O)NR'',

wherein said alkyl and alkenyl radicals ~~optionally~~ are ~~substituted~~ straight-chain, branched or cyclic and comprise 1 to 20 carbon atoms, the aryl ~~optionally~~ is a ~~substituted~~ phenyl, naphthyl or biphenyl, the alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl, alkylaryl, arylalkyl, arylene, alkylene and alkylenearylene radical is a derivative of said alkyl or aryl radical;

(iv) a compound of formula IV



wherein

R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~

X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxy carbonyl or  $\text{NR}''_2$ , where  $\text{R}''$  = hydrogen, alkyl, aryl or alkylaryl,

Y = an organic radical having 1 to 30 carbon atoms and 1 to 5 mercapto groups,

a = 1, 2 or 3,

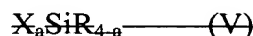
x = 1, 2 or 3, where  $a+x = 2, 3$  or 4;

and

(v) a precondensate derived from a compound represented by any of formulae I to IV

~~and wherein said hydrolytic polycondensation material further optionally comprises at least one compound selected from the group consisting of:~~

~~(1) a compound of formula V~~



wherein

~~R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~

~~X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxy carbonyl or  $\text{NR}''_2$ , where  $\text{R}''$  = hydrogen, alkyl, aryl or alkylaryl,~~

a — ~~—~~ 1, 2 or 3; and

(2) ~~—~~ a precondensate derived from a compound of formula V;

~~wherein said hydrolytic polycondensation is conducted by adding a substance selected from the group consisting of water, a solvent, and a condensation catalyst, and wherein said molar ratio of the sum of the compound(s) of formulae I, II, III and IV to the sum of compound(s) of formula V is between 1:0 and 1:20,~~

- (b) forming a membrane from the said low-viscosity to resinous liquid, and
- (c) curing the membrane by forming an organic network using a process selected from the group consisting of thermal curing, radiation-induced curing and chemically induced curing, ~~optionally or~~ if necessary, in the presence of additives which are addition-copolymerizable and/or can be subjected ~~so~~ to an addition and/or polyaddition reaction.

2. (Original) A process as described in claim 1, that further comprises adding to said liquid a substance selected from the group consisting of an addition-copolymerizable monomer, an addition-copolymerizable oligomer, a curing catalyst, and a pore generating additive.

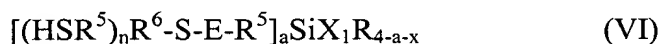
3. (Currently amended) The process as claimed in claim 1, that further comprises adding to said liquid at least one monomer or oligomer that ~~is addition-copolymerizable or that can be subjected to a (poly)addition reaction, optionally, addition of at least one curing agent, and optionally, addition of a pore generating additive.~~

4. (Cancelled)

5. (Currently amended) The process as claimed in claim 3 1, wherein said membrane is a flat or tubular membrane.

6. (Original) The process as claimed in claim 5, wherein said membrane is manufactured on a support.

7. (Original) The process as claimed in claim 1, wherein said liquid comprises polycondensates derived from at least one compound of formula I, the compound characterized by having a structure according to formula I wherein at least one index of formula I selected from the group consisting of a, b and c has the value 1.
8. (Original) The process as claimed in claim 1 wherein said liquid comprises at least one polycondensate derived from at least one compound of formula II or III and wherein radical B has at least one acrylate or methacrylate group.
9. (Currently amended) The process as claimed in claim 1, wherein said liquid comprises at least one polycondensate derived from at least one compound of formula VI, having the structure:



wherein

- E = -CO-NH-, -CS-NH-, -CH<sub>2</sub>-CH<sub>2</sub>- or -CH<sub>2</sub>-CH(OH)-;
- R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~
- R<sup>5</sup> = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 1 to 15 carbon atoms, ~~wherein optionally one or more radicals is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~
- R<sup>6</sup> = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 1 to 15 carbon atoms, ~~wherein optionally one or more radicals is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~
- X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''<sub>2</sub>, where R'' = hydrogen, alkyl, aryl or alkylaryl;

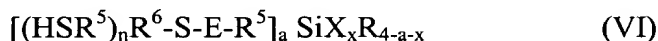


a = 1, 2 or 3;

n = 2, 3, 4 or 5;

x = 1, 2 or 3, where a+x = 2, 3 or 4.

10. (Currently amended) The process as claimed in claim 1, wherein said liquid comprises polycondensates comprising at least one compound selected from the group consisting of a compound according to formula II or III wherein radical B has at least one acrylate or methacrylate group, and comprises a compound according to the formula VI



wherein

E = -CO-NH-, -CS-NH-, -CH<sub>2</sub>-CH<sub>2</sub>- or -CH<sub>2</sub>-CH(OH)-;

R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, ~~further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~

R<sup>5</sup> = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 1 to 15 carbon atoms, ~~wherein optionally one or more radicals is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~

R<sup>6</sup> = alkylene, arylene, arylenealkylene or alkylenearylene comprising between 1 to 15 carbon atoms, ~~wherein optionally one or more radicals is interrupted by an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino;~~

X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''<sub>2</sub>, where R'' = hydrogen, alkyl, aryl or alkylaryl;

a = 1, 2 or 3;

n = 2, 3, 4 or 5;

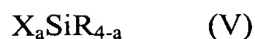
x = 1, 2 or 3, where  $a+x = 2, 3$  or 4.

11. (Original) The process as claimed in claim 1, wherein said liquid further comprises at least one organic compound selected from the group consisting of a compound having at least one mercapto group, a compound having at least one C=C double bond, and a compound having at least one amino group.
12. (Original) The process as claimed in claim 1, wherein said liquid comprises at least one polycondensate or oligocondensate having at least one C=C double bond, the polycondensate or oligocondensate being derived from at least one organically modified and hydrolytically condensable silane.
13. (Original) The process as claimed in claim 12, wherein said polycondensate or oligocondensate has at least one amino group and is derived from at least one organically modified, hydrolytically condensable silane.
14. (Original) The process as claimed in claim 1, wherein said liquid comprises at least one pore generating additive selected from the group consisting of at least one salt, additional liquid, blowing agent, and porous filler.
15. (Currently amended) The process as claimed in claim 14, which further comprises removing at least one pore generating additive from said membrane by dissolution, or thermal treatment or ~~thermal cracking~~ both.
16. (Original) A semipermeable membrane produced by a process as claimed in claim 1.
17. (Previously presented) A process for separating mixtures of substances selected from the group consisting of gas separation, reverse osmosis, electrodialysis, dialysis, pervaporation, microfiltration, ultrafiltration and hyperfiltration, wherein said process comprises separating said substances using the semipermeable membrane as claimed in claim 16.
18. (Original) A semipermeable membrane as claimed in claim 16, wherein the membrane is self-supporting.

19. (Original) A semipermeable membrane as claimed in claim 18, wherein the membrane has a flat or tubular form.
20. (Previously presented) The process for producing a semipermeable membrane according to claim 1, wherein in the formula IV the substituent Y is an organic radical having 1 to 20 carbon atoms and 1 to 4 mercapto groups.
21. (Previously presented) A process for producing a semipermeable membrane, comprising
- (a) preparing a low-viscosity to resinous liquid produced by hydrolytic polycondensation of a material comprising at least one compound selected from the group consisting of
    - (i) a compound of formula I as set forth in claim 1,
    - (ii) a compound of formula II as set forth in claim 1, and
    - (iii) a compound of formula III as set forth in claim 1;
  - and
  - (b) curing the membrane by forming an organic network using a process selected from the group consisting of thermal curing, radiation-induced curing and chemically induced curing.
22. (Previously presented) A process as set forth in claim 21, wherein curing the membrane according to step (b) is performed in the presence of additives which are addition-copolymerizable and/or can be subjected to an addition and/or polyaddition reaction.
23. (Previously presented) A process as set forth in claim 1, wherein radical B in formula III is an organic radical having at least two C=C double bonds.
24. (Previously presented) A process as set forth in claim 23, wherein radical B has at least two groups selected from the group consisting of acrylate and methacrylate groups.
25. (Previously presented) A process for producing a semipermeable membrane, comprising
- (a) preparing a low-viscosity to resinous liquid produced by hydrolytic polycondensation of a material comprising at least one compound selected from the group consisting of

- (i) a compound of formula I as defined in claim 1,
  - (ii) a compound of formula II as defined in claim 1, and
  - (iii) a compound of formula III as defined in claim 1, wherein radical B is an organic radical having at least two C=C double bonds; and
- (b) curing the membrane by forming an organic network using a process selected from the group consisting of thermal curing, radiation-induced curing and chemically induced curing.
26. (Previously presented) A process as set forth in claim 25, wherein radical B in formula III has at least two groups selected from the group consisting of acrylate and methacrylate groups.
27. (Previously presented) The process according to claim 1, wherein said process further comprises drying the membrane after curing the membrane from the low-viscosity to resinous liquid.
28. (New) A process according to claim 1, wherein any of radicals R, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>5</sup>, and R<sup>7</sup> of formula I; radical R of formula II, radical R of formula III and radical R of formula IV may further comprise an atom or group selected from the group consisting of an oxygen atom, a sulphur atom, an ester group, a carbonyl group, a carboxy group, an amido group and an amino group.
29. (New) A process according to claim 1, wherein any of radicals R<sup>1</sup> and R<sup>3</sup> of formula II may be interrupted by an atom or group selected from the group consisting of an oxygen atom, a sulfur atom and an amino group.
30. (New) A process according to claim 1, wherein any of the alkyl and alkenyl radicals or aryl radicals as defined for R and R" in formula III can be substituted.
31. (New) A process according to claim 1, wherein said hydrolytic polycondensation material further comprises at least one compound selected from the group consisting of:

- (1) a compound of formula V



wherein

R = alkyl, alkenyl, aryl, alkylaryl or arylalkyl comprising between 1 to 15 carbon atoms, further optionally comprising an atom or group selected from the group consisting of oxygen atom, sulfur atom, ester, carbonyl, carboxyl, amido, and amino,

X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxy carbonyl or  $NR''_2$ , where  $R''$  = hydrogen, alkyl, aryl or alkylaryl,

a = 1, 2 or 3; and

(2) a precondensate derived from a compound of formula V;

wherein said hydrolytic polycondensation is conducted by adding a substance selected from the group consisting of water, a solvent, and a condensation catalyst, and wherein said molar ratio of the sum of the compound(s) of formulae I, II, III and IV to the sum of compound(s) of formula V is between 1:0 and 1:20.

32. (New) A process according to claim 1, wherein the curing step (c) is performed in the presence of additives which are addition-copolymerizable and/or can be subjected to an addition and/or polyaddition step, although the said additions are not necessarily required for said curing.

33. (New) A process according to claim 9, wherein radical R of formula VI further comprises an atom or group selected from the group consisting of an oxygen atom, a sulphur atom, an ester group, a carbonyl group, a carboxy group, an amido group and an amino group.

34. (New) A process according to claim 9, wherein any of radicals  $R^5$  and  $R^6$  can be interrupted by an atom or group selected from the group consisting of an oxygen atom, a sulphur atom, an ester group, a carbonyl group, a carboxy group, an amido group and an amino group.

35. (New) A process according to claim 10, wherein radical R of formula VI further comprises an atom or group selected from the group consisting of an oxygen atom, a sulphur atom, an ester group, a carbonyl group, a carboxy group, an amido group and an amino group.
36. (New) A process according to claim 10, wherein any of radical R<sup>5</sup> and R<sup>6</sup> can be interrupted by an atom or group selected from the group consisting of an oxygen atom, a sulphur atom, an ester group, a carbonyl group, a carboxy group, an amido group and an amino group.
37. (New) A process according to claim 1, wherein after curing according to step (c), the organic components are removed by thermal cracking.
38. (New) A process according to claim 31, wherein after curing according to step (c), the organic compounds are removed by thermal cracking.
39. (New) A process according to claim 32, wherein after curing according to step (c), the organic compounds are removed by thermal cracking.
40. (New) A semi-permeable membrane produced by a process as claimed in claim 31.
41. (New) A semi-permeable membrane produced by a process as claimed in claim 32.
42. (New) A semi-permeable membrane produced by a process as claimed in claim 37.
43. (New) A semi-permeable membrane produced by a process as claimed in claim 38.
44. (New) A semi-permeable membrane as claimed in claim 40, wherein the membrane is self-supporting.
45. (New) A semi-permeable membrane as claimed in claim 40, wherein the membrane has a flat or tubular form.
46. (New) A semi-permeable membrane as claimed in claim 41 wherein the membrane is self-supporting.

47. (New) A semi-permeable membrane as claimed in claim 41 wherein the membrane has a flat or tubular form.

48. (New) A semi-permeable membrane as claimed in claim 42 wherein the membrane is self-supporting.

49. (New) A semi-permeable membrane as claimed in claim 42, wherein the membrane has a flat or tubular form.

50. (New) A semi-permeable membrane as claimed in claim 43 wherein the membrane is self-supporting.

51. (New) A semi-permeable membrane as claimed in claim 43 wherein the membrane has a flat or tubular form.